Trend surface analysis of hand, foot and mouth disease in Sarawak

ABSTRACT

In this study we aim to fit a trend surface model for Hand, Foot And Mouth Disease (HFMD) in Sarawak and also check the adequacy of the model obtained. For this, the epidemiological data of year 2012(outbreak year) and 2011 are used. Models were built up to second order polynomial based on the idea that number of HFMD cases can be described by regression residual analysis. With Moran I statistic, residuals from all the trend surface models were examined for spatial auto correlation. All six trend surface models for 2011 data had residuals that were not spatially auto correlated.However, one model for 2012 data showed spatial auto correlation. The best model for each year of the two years that represent disease outbreak and non-outbreak situations was selected based on Mallows' Cp statistic. These models could be used to predict the number of cases for locations of interest.

Keyword: HFMD; Sarawak; Spatial auto correlation; Trend surface model